CLAIMS

1. (Currently Amended) A method for preparing an anodized electrode comprising the sequential steps of:

(1) providing a substrate;

(2) coating the surface of the substrate by vacuum deposition thereon of a porous coating comprising at least one substance selected from valve metals, valve metal oxides and mixtures thereof;

(3) increasing the effective surface area of said porous coating; and

(4) producing electrolytically at least one anodized valve oxide layer overlaying the surface of said porous coating;

and wherein said effective surface area increase of said porous coating is implemented by at least one of the following:

increasing the total pore volume of said porous coating;

increasing the average pore width in said porous coating.

2. (Canceled)

3. (Currently Amended) A method according to claim 1, which is further characterized by at least one of the following features:

(a) said substrate is an electrically conductive substrate;

(b) said porous coating comprises at least one member selected from aluminum, aluminum oxide and mixtures thereof;

(c) said at least one electrolytically produced layer comprises aluminum oxide;

(d) said effective surface area increase has been implemented by at least one procedure selected from:

electrochemical etching, and

oxidizing the surface of said porous coating [layer] followed by removal of thus formed oxide;

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(e) prior to deposition of said porous coating, the surface of said substrate has been subjected to a roughening procedure selected from mechanical, chemical and electrochemical procedures;

(f) said vacuum deposition is carried out in an inert gas atmosphere at a pressure about 10^{-3} Torr. and about 10^{-2} Torr,

(g) said vacuum deposition is carried out in an inert gas atmosphere in presence of a minor amount of oxygen;

(h) following step (4), the product is thoroughly rinsed with a liquid selected from distilled and de-ionized water, and then dried.

4. (Original) A method according to claim 3, which is further characterized by at least one of the following features:

(A) said electrically conductive substrate is a metallic foil substrate;

(B) step (3) is implemented by electrolytic anodization and simultaneously or subsequently removing electrolytically formed valve metal oxide.

5. (Currently Amended) A method according to claim 4, wherein step (4) is carried out by forming a series of at least two anodized layers, [and] provided that the product of said forming is subjected to annealing prior to forming the last anodized layer in said series [of said at least two anodization steps].

6. (Currently Amended) A method according to claim 5, wherein the product of said forming is thoroughly rinsed with a liquid selected from distilled and de-ionized water, prior to said annealing.

7. (Currently Amended) A method according to claim 4, wherein said substrate is a metallic foil substrate; in step (2) said at least one valve metal comprises aluminum; in step (3) said increasing is implemented by oxidizing the surface of said [initial] vacuum deposited porous coating [layer] by anodization in presence of an electrolyte which comprises a saturated dicarboxylic acid salt selected from the ammonium and alkali metal salts, and removing thus-

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formed valve metal oxide(s) by use of a halogen-free chemical etchant *in situ* or in a discrete subsequent sub-step; and in step (4) said at least one layer comprises aluminum oxide.

8. (Currently Amended) A method according to claim 7, wherein step (4) is carried out by forming a series of at least two anodized layers, [and] provided that the product of said forming is subjected to annealing prior to forming the last anodized layer in said series [of said at least two anodization steps].

9. (Original) A method according to claim 7, wherein at least one of the following features applies:
said vacuum deposition is carried out in an inert gas atmosphere at a pressure about 10^{-3} Torr. and about 10^{-2} Torr. in presence of a minor amount of oxygen;
said electrolyte comprises a salt selected from the ammonium and alkali metal adipates;
said chemical etchant is selected from chromic, oxalic and phosphoric acid, and mixtures thereof.

10. (Original) A method according to claim 8, at least one of the following features applies:
said vacuum deposition is carried out in an inert gas atmosphere at a pressure about 10^{-3} Torr. and about 10^{-2} Torr. in presence of a minor amount of oxygen;
said electrolyte comprises a salt selected from the ammonium and alkali metal adipates;
said chemical etchant is selected from chromic, oxalic and phosphoric acid, and mixtures thereof.

11. (Currently Amended) A method according to claim 4, wherein said substrate is a metallic foil substrate; in step (2) said at least one valve metal consists essentially of aluminum and said vapor deposition of claim 3, clause (g) is carried out [in presence of a minor amount of oxygen] such that said porous coating [layer] consists essentially of aluminum metal and aluminum oxide; in step (3) said increasing is implemented by oxidizing the surface of said porous coating [initial layer] by anodization in presence of an electrolyte which comprises a saturated dicarboxylic acid salt selected from the ammonium and alkali metal salts thereof, and removing thus-formed valve metal oxide(s) by use of a halogen-free chemical etchant *in situ* or in a discrete subsequent sub-step; and in step (4) said at least one layer comprises aluminum oxide.

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12. (Currently Amended) A method according to claim 11, wherein step (4) is carried out by forming a series of at least two anodized layers, [and] provided that the product of said forming is subjected to annealing prior to forming the last anodized layer in said series [of said at least two anodization steps].

13. (Currently Amended) A method according to claim 11, wherein at least one of the following features applies:
said vacuum deposition is carried out in an inert gas atmosphere at a pressure about 10^{-3} Torr. and about 10^{-2} Torr.;
said vacuum deposition conditions are such that said porous coating [layer] prior to step (3) consists essentially of at least 40% aluminum metal, balance aluminum oxide;
said electrolyte comprises a salt selected from the ammonium and alkali metal adipates;
said chemical etchant is selected from chromic, oxalic and phosphoric acid, and mixtures thereof.

14. (Currently Amended) A method according to claim 11, wherein at least one of the following features applies:
said vacuum deposition is carried out in an inert gas atmosphere at a pressure about 10^{-3} Torr. and about 10^{-2} Torr.;
said vacuum deposition conditions are such that said porous coating [layer] prior to step (3) consists essentially of 50-85% aluminum metal, balance aluminum oxide;
said electrolyte comprises a salt selected from the ammonium and alkali metal adipates;
said chemical etchant is selected from chromic, oxalic and phosphoric acid, and mixtures thereof.

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15. (Currently Amended) A method for preparing an anodized electrode which includes pores having a branched morphology, comprising the sequential steps of:

(1) providing a metallic foil substrate;

(2) coating the surface of the substrate by vacuum deposition thereon of aluminum vapor in presence of a minor amount of oxygen such that a porous coating [layer], consisting essentially of an aluminum metal component and an aluminum oxide component, is deposited on said substrate;

(3) increasing the effective surface area of said porous coating by electrolytic anodization in presence of an electrolyte which comprises a saturated dicarboxylic acid salt selected from the ammonium and alkali metal salts, and removing thus-formed valve metal oxide(s), as well as at least part of said aluminum oxide component, by use of a halogen-free chemical etchant *in situ* or in a discrete subsequent sub-step; and

(4) producing electrolytically at least one anodized aluminum oxide layer ovelaying the surface of said porous coating.

16. (Currently Amended) A method according to claim 15, wherein at least one of the following features applies:

said vacuum deposition is carried out in an inert gas atmosphere at a pressure about 10^{-3} Torr. and about 10^{-2} Torr.;

said vacuum deposition conditions are such that said porous coating [layer] prior to step (3) consists essentially of at least 40% aluminum metal, balance aluminum oxide;

said electrolyte comprises a salt selected from the ammonium and alkali metal adipates;

said chemical etchant is selected from chromic, oxalic and phosphoric acid, and mixtures thereof.

17. (Currently Amended) A method according to claim 16, wherein step (4) is carried out by forming a series of at least two anodized layers, [and] provided that the product of said forming is subjected to annealing prior to forming the last anodized layer in said series [of said at least two anodization steps].

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18. (Withdrawn) An anodized electrode comprising:

a substrate;

a porous coating on the surface of said substrate produced by vacuum deposition thereon, said porous coating comprising at least one substance selected from valve metals, valve metal oxides and mixtures thereof; and

at least one electrolytically produced anodized layer selected from valve metal oxides and mixtures thereof;

wherein in said porous coating, the effective surface area has been increased prior to deposition of said at least on anodized layer.

19. (Withdrawn) An anodized electrode according to claim 18, which is further characterized by at least one of the following features:

(a) said substrate is an electrically conductive substrate;

(b) said porous coating comprises at least one member selected from aluminum, aluminum oxide and mixtures thereof;

(c) said at least one electrolytically produced layer comprises aluminum oxide;

(d) said effective surface area increase has been implemented by oxidizing the surface of said porous layer and removing thus formed oxide;

(e) prior to deposition of said porous coating, the surface of said substrate has been subjected to roughening procedure selected from mechanical, chemical and electrochemical procedures.

20. (Withdrawn) An anodized electrode according to claim 19, wherein said porous coating consists essentially of aluminum and aluminum oxide and said at least one anodized layer consists of aluminum oxide.

21. (Withdrawn) An anodized electrode according to claim 20, wherein prior to effective surface area increase and anodization, said porous coasting consists essentially of 50-85% aluminum metal, balance aluminum oxide.

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22. (Withdrawn) An anodized electrode according to claim 18, wherein said effective surface area increase had been implemented by at least one of the following:

increasing the total pore volume of said porous coating;

increasing the average pore width in said porous coating.

23. (Withdrawn) An anodized electrode which comprises non-cylindrical pores having a branched morphology.

24. (Withdrawn) An anodized electrode according to claim 23, wherein at least some of said pores are generally configured as inverted cones.

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